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Notes on the nests and eggs of some birds at the Crater Mountain Research Station, Papua New Guinea

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The avifauna of Papuaasia is highly endemic, 54% of its species being confined to the region (Coates 1985, 1990). Many New Guinea species remain poorly known due to the rugged inaccessibility of many regions and relatively few ornithologists working there. The nest and/or eggs of roughly 50% of New Guinea's endemic bird species have not been described. Furthermore, 13% of the non-endemic species occurring in Papua New Guinea have their nests and eggs described from elsewhere, but not in Papua New Guinea (Coates 1985, 1990).

This paper provides data on the previously undescribed nests and/or eggs of ten Papuan species and observations at nests of an additional six species. Nests and eggs of another 22 species were found during the study (Appendix), but these are not described here as my observations closely matched previous accounts.

These observations were made in the proposed Crater Mountain Wildlife Management Area in the vicinity of the Crater Mountain Biological Research Station (06°43'S, 145°05'E) roughly 10 km east of Haia, Chimbu Province, Papua New Guinea. The study area is rugged hill forest spanning an altitudinal range of 850–1300 m a.s.l. in the headwaters of the Pio-Purari drainage. The vegetation is diverse with no markedly dominant species, ranging from mixed evergreen hill forest to sub-montane forest (Paijmans 1976). There are some abandoned gardens in the study area, from 10 to 50 years old, that form a mosaic of variously-aged second growth. These small plots are largely confined to level ground close to watercourses, and most forest away from the river shows little or no sign of recent human disturbance. Annual rainfall during the study period was 600–700 cm with no pronounced wet and dry season.

Fieldwork was conducted from May 1990 to March 1993 with the exceptions of November–December 1990, January–March 1993 and several 1–2 week absences. These are incidental observations made

during the study of the Dwarf Cassowary *Casuarius bennetti*, observations of other birds and their nests being made as time allowed. Given the paucity of published field observation of Papuan birds, incidental observations such as these can make a significant addition to the ornithology of this unique region.

Species accounts

In all cases (save *Corvus tristis*) the attending adult birds were carefully observed. An asterisk before a species name indicates that the nest and/or egg have not been previously described (Coates 1985, 1990). The Appendix lists the additional species found nesting at the station. The nomenclature follows Beehler *et al.* (1986).

GREAT CUCKOO-DOVE *Reinwardtoena reinwardtii*

A nest was found 26 July 1990 in the whorl of a monopodial *Pandanus* sp. (Pandanaeae) tree *c.* 12 m above ground. The nest was more substantial than most columbid nests, being made of fine twigs and slightly raised at the edges to form a shallow bowl. The single egg was uniform white with slight brownish tinge.

ORNATE FRUIT-DOVE *Ptilinopus ornatus**

A nest found 8 October 1992 was in a dense vine tangle in an understory tree that was bent over so that its crown was nearly horizontal. The nest was a typical *Ptilinopus* scanty platform of a few twigs 3 m above ground. No egg was visible.

SULPHUR-CRESTED COCKATOO *Cacatua galerita*

A presumed nest cavity was found in a tall *Aglaia* sp. (Meliaceae) tree in mid-June 1992. Two birds were in attendance during several of my visits until early August, after which they were not seen. The opening was where a branch had snapped off the straight bole *c.* 18 m above ground. The birds apparently pruned hundreds of leaves, twigs, immature fruits, and branches up to 8 cm in diameter from the tree's canopy, making the crown markedly more open. Perhaps this might have made it more difficult for nest-robbers to approach the nest, or warmed the nest chamber by increasing the amount of sunlight reaching it.

VULTURINE PARROT *Psitttrichas fulgidus**

A nest found 26 August 1991 was in a cavity 12 m above ground in a large (*c.* 70 cm DBH) dead tree. The cavity entrance was partially concealed by a climbing aroid (Araceae) and a *Freycinetia* sp. (Pandanaeae) climber. On 27 August the female remained in the nest hole, presumably incubating, for 4 hours, after which she came out and was fed by the male. On 9 November the female was observed visiting the hole repeatedly, presumably to feed the chick(s). Thus, the egg-laying to fledging time was at least 76 days. In 1992 the nest tree fell and I examined it. The cavity was excavated in the rotted heartwood to *c.* 1.2 m deep. The bottom of the cavity was deeply

layered (c. 20 cm) with small bits of wood that appeared to have been shredded from the cavity interior.

STOUT-BILLED CUCKOO-SHRIKE *Coracina caeruleogrisea**

On 13 November 1991 a nest under construction was found; a bird was seen bringing spider webs to the nest and shaping the bowl with its chest. In 18 November a single egg was on the nest but seven days later the nest and egg were gone. The nest was 8 m up in an understory tree that leaned over a wooded precipice. The nest was a very shallow cup (almost a platform) made of fine, dry, plant fibres built atop a horizontal main stem, not enclosing it. Spiders' webs were loosely plastered on the outside of the nest and around the rim. The single egg was a lustrous pale grey with a strong olive cast, marked with dark rufous-brown splotches and flecks forming a ring toward the broad end of the egg with fewer flecks scattered toward the ends.

A second nest was found 9 December 1991, situated like the first in a small tree leaning over a very steep ridge-side, c. 20 m above ground. This nest was smaller and concealed by epiphytes. The male and female took turns incubating, essentially covering the small nest so it looked like a bird perched on a horizontal branch.

GREY-GREEN SCRUB-WREN *Sericornis arfakianus**

A nest under construction 17 May 1991 was a domed mass of mosses with a side entrance, roughly 15 cm tall, enclosing the base of a small sapling. The entrance hole was 12 cm above ground. Dry bamboo leaves lined the interior and a few poked out of the entrance. Two individuals were observed nest-building. The nest was empty and unattended on a return visit.

YELLOW-BREASTED BOATBILL *Machaerirhynchus flaviventer*

A nest was found on 18 September 1992, c. 9 m above ground in the fork of an understory tree (Rubiaceae). It was a sparse (external dimensions [cm] 6.3 length \times 5.3 width) basket of dry plant fibres and stems bound together with spider webs. The bottom of the nest was thin, allowing light through. Eleven days later the nest was abandoned.

CRESTED PITOUI *Pitohui cristatus**

On 27 November 1992 a nest was found, containing two eggs, 1.8 m above ground in the whorl of a monopodial *Pandanus* sp. tree. The nest was a cup 14 cm deep, the outside made of twigs and dead leaves and the inside of the cup of finer, more tightly interlaced tendrils, vines, and epiphyte rootlets. The rim of the nest was lightly dotted with live mosses. The two eggs were oblong, measuring 33.9 \times 22.8 and 32.0 \times 22.4 mm. The egg was bright white with irregularly spaced dark grey, black and a few pale grey flecks, somewhat denser toward the broad end; on the broad end was a small cap of grey and black splotches and a few fine, black squiggly lines.

DWARF HONEYEATER *Oedistoma iliolophus*

Although several nests have been described (Coates 1990), one found in October 1992 was unusually situated. It was enclosed in the

semicircular base of a fallen *Pandanus* leaf hanging in understory vegetation 60 cm above ground. Eggs from two nests at Crater Mountain (20.4×14.3 and 20.5×14.1 mm) closely match the description and measurements given for *O. i. fergussonis* in Coates (1990).

SPOT-BREASTED MELIPHAGA *Meliphaga mimikae**

A nest was found on 13 March and another on 25 April 1991, both in the forks of horizontal branches in understory trees 1.7 and 2.0 m above ground. The nests were slightly oblong open cups (external dimensions [cm] $9.0 \times 7.5 \times 7.5$ height; internal $5.0 \times 4.5 \times 4.5$ depth) made of fine plant fibres, twigs and vines thickly covered on the outside by living mosses and ferns. The insides of the cups were thickly layered with loose, shredded, fluffy, light-brown plant down that partially concealed the eggs when not being incubated. Both nests contained two eggs when found. Eggs were light salmon with a sparse ring of rust-coloured flecks toward the broad end and lightly flecked with rust over the remainder of the eggs. One egg measured 23.7×16.4 mm.

MOUNTAIN MELIPHAGA *Meliphaga orientalis**

A nest was found on 11 May c. 2 m above ground in a horizontal fork. The nest was similar to that of *M. mimikae*, but somewhat smaller (external dimensions all 7.5 cm), and more tightly constructed. The internal dimensions were $5.5 \times 4.5 \times 4.5$ depth, and it was lined with plant-down identical to that found in the *M. mimikae* nests. The outside of the nest was covered with live mosses and dead bamboo leaves. One egg was almost pure white with a few very small indistinct flecks of pale red-brown, while the other was more heavily flecked, particularly toward the broad end. By 13 May both eggs hatched and by 19 May the nest was empty.

OBSCURE HONEYEATER *Lichenostomus obscurus*

A nest with two eggs was found on 17 October 1992 that resembled previously described nests (Coates 1990). However, this nest was tilted to one side with the rim built-up on the higher side to form a partial dome covering almost one quarter of the cup. The eggs measured 22.5×16.5 and 23.1×16.5 mm.

STREAK-HEADED MANNIKIN *Lonchura tristissima*

A nest was observed under construction 9–11 April 1992 with at least two birds working on it. The nest, a globular mass of bamboo leaves and fine stems, was c. 5 m up in dense foliage of an understory tree at the edge of a clearing by a ravine.

MOUNTAIN DRONGO *Chaetorhynchus papuensis**

A nest found on 20 October 1992 was c. 4 m above ground in a branch fork of an understory tree. It was a tidy, round, shallow cup of tightly constructed light brown vines and plant fibres. The lower two-thirds of the cup exterior was thinly covered with live mosses; the upper one-third was unadorned. One egg measuring 26.2×17.6 mm

was being incubated; base colour light brown, heavily flecked with dull rufous marks. Denser flecks formed a ring toward the broad end and a nearly solid cap on the broad end. On 24 October the nest and egg were gone.

TORRENT-LARK *Grallina bruijni**

On 21 November 1991 a cup nest was found with the male incubating a single egg. The nest was hanging from a fork in a *Ficus* sp. (Moraceae) branch 1.5 m over a river. External nest diameter was 9.5, depth 7.7 cm; cup diameter 6.8, depth 3.0 cm. The nest interior was made of fine black plant stems and epiphyte roots; the exterior was covered with a thick layer of mud. The egg measured 24.6 × 18.3 mm; it was white with pale rust flecks, a few toward the narrow end with more, longer and wider flecks toward the broad end. On 7 December a 1–2 day old chick was in the nest; thus incubation time was at least 16 days. Skin of the naked chick was black, matched by the colour of the nest lining.

GREY CROW *Corvus tristis**

Little is known of the nesting of this species (Goodwin 1986). A large nest (roughly 80 cm external diameter) that was an untidy mass of large sticks was found high in an emergent tree (*Aglaia* sp.) in late May 1992. My local assistants assured me it was the nest of this species and agitated Grey Crows were seen in the immediate vicinity, but none were seen actually going to the nest.

Concluding remarks

A variety of birds place their nests in the leaf whorls of *Pandanus* trees. I observed six species commonly nesting in pandans at the Crater Mountain Station (see Appendix). Pandans, with their thorny stems and sharply pointed serrated leaves, are probably difficult for some predators to climb and manoeuvre in. The nests I found were cryptic because they resembled the detritus that typically collects in the whorls at the leaf bases. However, these sites might have drawbacks; nest-robbing birds such as the Greater Black Coucal *Centropus menbeki* and Black Butcherbird *Cracticus quoyi* actively search *Pandanus* whorls for prey (pers. obs.). Because the seven species of *Pandanus* in the study area are quite numerous, many nests probably go undetected by predators that search pandans.

Papua New Guinea still has vast tracts of relatively undisturbed rainforest, offering the opportunity to study rainforest birds under normal (unmodified) conditions—an opportunity that is becoming rare in many regions of the tropics. However, few field studies have been made of most New Guinean birds. This paper describes many novelties observed only incidentally while undertaking other field studies. Hopefully it shows how much more could readily be learned through

concentrated studies of the nesting biology of New Guinea's birds and will stimulate interest in this neglected region.

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APPENDIX

Species observed nesting at the Crater Mountain Biological Research Station. P indicates species found nesting in *Pandanus* trees (see text).

Common Scrubfowl *Megapodius freycinet*, Brown Cuckoo-Dove *Macropygia amboinensis* P, Great Cuckoo-Dove *Reinwardtoena reinwardtii* P, Pheasant Pigeon *Otidiphaps nobilis*, Ornate Fruit-Dove *Ptilinopus ornatus*, Superb Fruit-Dove *Ptilinopus superbis*, Beautiful Fruit-Dove *Ptilinopus pulchellus*, Red-flanked Lorikeet *Charmosyna placensis*, Sulphur-crested Cockatoo *Cacatua galerita*, Large Fig-Parrot *Psittaculirostris desmarestii*, Eclectus Parrot *Eclectus roratus*, Vulturine Parrot *Psittichas fulgidus*, Hook-billed Kingfisher *Melidora macrorrhina*, Stout-billed Cuckoo-shrike *Coracina caeruleogrisea*, Grey-green Scrub-wren *Sericornis arfakianus*, Chestnut-bellied Fantail *Rhipidura hyperythra*, Black-winged Monarch *Monarcha frater*, Spot-winged Monarch *Monarcha guttula*, Yellow-breasted Boatbill *Machaerirhynchus flaviventer*, White-eyed Robin *Pachycephalopsis poliosoma*, Little Shrike-thrush *Colluricincla megarhyncha* P, Rusty Pitohui *Pitohui ferrugineus*, Crested Pitohui *Pitohui cristatus* P, Black Berrypecker *Melanocharis nigra*, Long-billed Honeyeater *Melilestes megarhynchus*, Slaty-chinned Longbill *Toxorhamphus poliopterus*, Dwarf Honeyeater *Oedistoma iliolophus*, Spot-breasted Meliphaga *Meliphaga mimikae*, Mountain Meliphaga *Meliphaga orientalis*, Obscure Honeyeater *Lichenostomus obscurus*, Streak-headed Mannikin *Lonchura tristissima*, Mountain Drongo *Chaetorhynchus papuensis*, Torrent-lark *Grallina brujini*, Mountain Peltops *Peltops montanus*, White-eared Catbird *Ailuroedus buccoides* P, Magnificent Bird of Paradise *Cicinnurus magnificus* P, Grey Crow *Corvus tristis*.